

## Speciation and Bioavailability of Heavy Metals in Greenhouse Soils

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**Abstract :** Repeated amendments of organic matter and intensive use of fertilizers, metal-enriched chemicals and biocides may cause soil and environmental pollution in greenhouses. Specially, the impact of heavy metal pollution of soils on food metal content and underground water quality has become a public concern. Due to potential toxicity of heavy metals to human life and environment, determining the chemical form of heavy metals in greenhouse soils is an important approach of chemical characterization and can provide useful information on its mobility and bioavailability. A sequential extraction procedure was used to estimate the availability of heavy metals (Zn, Cd, Ni, Pb and Cr) in greenhouse soils of Antalya Aksu. Zn was predominantly associated with Fe-Mn oxide fraction, major portion of Cd associated with carbonate and organic matter fraction, a major portion of (>65 %) Ni and Cr were largely associated with Fe-Mn oxide and residual fractions and Pb was largely associated with organic matter and Fe-Mn oxide fractions. Results of the present study suggest that the mobility and bioavailability of metals probably increase in the following order: Cr < Pb < Ni < Cd < Zn. Among the elements studied, Zn and Cd appeared to be the most readily soluble and potentially bioavailable metals and these metals may carry a potential risk for metal transfer in food chain and contamination to ground water.

**Keywords :** metal speciation, metal mobility, greenhouse soils, biosystems engineering

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